

What Is Claimed Is:

1. A device for measuring angular positions using radar pulses and mutually overlapping antenna beam characteristics of at least two antenna elements having the following features:
  - in the signal path of at least one antenna element (2) a switchable phase shifter (3) is provided, which is switchable in time-division multiplexing between different phase states and thereby changes the radiation characteristics of the respective antenna element,
  - an evaluation unit (7) is provided for the joint evaluation of received signals of at least two antenna elements (1, 2) having the participation of the at least one antenna element (2), in whose signal path a switchable phase shifter (3) is provided.
2. The device as recited in Claim 1,  
wherein the device is designed to obtain the angle of a target by comparison of the relative amplitude changes and phase changes of radar pulses in the receiving path in both switching states of the at least one switchable phase shifter (3).
3. The device as recited in Claim 1 or 2,  
wherein the switchable phase shifter (3) is set up so as to assume phase states  $0^{\circ}$  and  $180^{\circ}$ .
4. The device as recited in one of Claims 1 through 3,  
wherein at least two antenna elements (1, 2) are connected via an  $180^{\circ}$  hybrid (10) as phase setting element, particularly for the simultaneous evaluation of the composite beam and the differential beam of at least two antenna elements.
5. The device as recited in one of Claims 1 through 3,  
wherein at least two antenna elements (1, 2) are connected via an  $180^{\circ}$  hybrid (10) as phase setting element; and a transfer switch (11) is provided at the output of the  $180^{\circ}$  hybrid for evaluating the composite beam and the differential beam of at least two antenna elements via a mixer in time-division multiplexing.
6. The device as recited in one of Claims 1 through 5,  
wherein the switch-over time of the at least one phase shifter (3) and therewith the switch-over time between two beam characteristics may be set in such a way that the relative motions of targets and the antennas element carriers is negligible or may be compensated for in the evaluation.
7. The device as recited in one of Claims 1 through 6,

wherein the switch-over time of the at least one phase shifter (3) and therewith the switch-over time between two radiation characteristics is able to be set at least in such a way that the homodyne principle (direct mixing into the NF baseband) is applicable.

8. The device as recited in Claim 6 or 7,  
wherein during operation in the GHz range, the switch-over time may be set in the range of 5 to 50  $\mu$ s.
9. The device as recited in one of Claims 1 through 8,  
wherein for the elevation focusing and/or the azimuth focusing, more than two antenna elements are provided, especially in row and column positioning, preferably in each case at least two groups of antenna elements being able to be evaluated jointly and simultaneously; and in the signal path, a phase shifter (3) that is able to be switched over being assigned to at least one group.
10. The device as recited in one of Claims 1 through 9,  
wherein the at least one phase shifter (3) is designed as a PIN diode phase shifter or a MEMS phase shifter.
11. The device as recited in one of Claims 1 through 10,  
wherein HF components which require assembly are applied to only one side of a printed-circuit board, particularly on the side facing away from the antenna elements (1, 2).